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ABSTRACT

This teaching unit, Introduction to Plumbing, is one in a series of career guides developed by Project CHOICE (Children Have Options in Career Education) to provide the classroom teacher with a source of career-related activities linking third and fourth grade elementary classroom experiences with the world of work. Part of the Industrial and Construction Occupations Career Cluster, these nine lessons review basic tools and equipment used by plumbers, discuss the consumer/plumber relationship and explore types of plumbing work and skills needed for this career. An introductory section gives the unit rationale, goals, performance objectives, entry-level assessment, and evaluation. A list of instructional materials, such as films, filmstrips, books, art supplies, and community resources, is included in this section. Each lesson contains a statement of purpose, materials needed for the lesson, an introductory statement, class activities, and a summary activity. Written materials (such as worksheets, surveys, and task cards) are included where feasible. (This guide is one of twenty-four in the series for grades 3 and 4--CE 025 766-789.) (MEK)

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OFFICE OF CLAUDE W. RICHARDSON
KERN COUNTY SUPERINTENDENT OF SCHOOLS

Project CHOICE
#104

A CAREER UNIT FOR GRADES 3 AND 4

INTRODUCTION TO PLUMBING

(Industrial and Construction Occupations Career Cluster)

CE 025 770

September, 1977

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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FOREWORD

Project CHOICE: Children Have Options in Career Education, is an Exemplary Project from the San Diego City School District, which has been adapted, with ESEA Title IV-C funding, for Kern County Schools.

Through Project CHOICE, units have been developed to provide the classroom teacher with a source of career-related activities linking classroom experiences with the world of work. All students, regardless of their post-high school plans, share an equal need for career awareness, decision making skills, and other elements of career education. This goal can be accomplished if all teachers and counselors "fit" the appropriate units where they best apply in the curriculum.

We are indebted to the San Diego City School District, and the Project CHOICE staff, for developing and field testing the original units.

For their excellent work in re-writing the units in order to adapt them for use in Kern County Schools, we wish to recognize:

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Industrial and Construction Occupations Career Cluster

INTRODUCTION TO PLUMBING

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Industrial and Construction Occupations Career Cluster

INTRODUCTION TO PLUMBING

RATIONALE

In this unit, children will become aware of the important role the plumber plays in modern society. Many children are interested in working with their hands, a skill fundamental to plumbing. Pupils will learn some terminology and background related to the plumbing trade. They will learn the vast number of tasks performed by plumbers. Job appreciation and worker/consumer attitudes will also be explored.

GOALS

Through this unit, pupils will:

- -Become aware of how plumbing affects their lives.
- -Learn about the basic tools and equipment used by plumbers.
- -See the relationship between educational skills and skills needed on the job.
- -Gain an understanding of the consumer/plumber relationship.
- -Become aware of the need for safety precautions taken by plumbers.
- -Understand the difference between new construction and repair work.

PERFORMANCE OBJECTIVES

The pupils will be able to:

- -State examples of how plumbing affects their lives.
- -Give examples of basic hand tools and equipment.
- -Distinguish between new construction and repair work.
- -Describe the role of the plumber in the worker/consumer relationship.
- -Relate educational skills to skills used on the job.
- -List some safety rules and gain an understanding of their necessity.
- -Tell why it would be useful for a layman to know something about plumbing.

ENTRY LEVEL ASSESSMENT

Use this informal inventory to determine class awareness of the plumbing trade:

1. How does plumbing affect our lives?

2. What tools or equipment would a plumber need?

3. What school-learned skills do you think would be needed by a plumber to do his job?

4. Can you think of some safety rules a plumber might need to follow?

5. What do you think is the difference between a plumber who does repair work and one who does new construction?

EVALUATION

The final lesson has been set aside for evaluation. The Entry Level Assessment may be used as a pretest as well as a post-test, or the teacher may wish to develop his/her own. Responses may be taped or written, so that comparisons may be made in order to determine how well pupils have achieved the objectives.

SUGGESTED INSTRUCTIONAL MATERIALS

Use these materials and equipment in this unit:

-Task cards.
-Library books, as listed.
-Tool and equipment samples.
-Vocabulary cards.
-Tool catalogs.
-Art materials.
-Magazines and newspapers.
-Telephone directories.
-Tapes and tape recorder.
-Permission slips.

Film:

Jobs in the City: Construction

Books:

Title	Author
Come to Work with Us in House Construction	Wilkinson
Let's Take a Trip to Watch a Building Go Up	Goodspeed

Title	Author
The Skyscraper	Liang
How a House Is Built	Beneson
Your World: Let's Build a House	Pope

COMMUNITY RESOURCES

-Parent groups.

-Local plumbers' union.

-Local retail outlet for plumbing supplies.

-Kern Co. Plumbers & Steamfitters AF of C; 324-9768; Bakersfield.

INSTRUCTIONAL STRATEGY: LESSONS 1-9

Lesson 1

PURPOSE — To determine how plumbing affects our lives.

MATERIALS

1. Pencils.
2. Paper.
3. Task cards 1 and 2.

INTRODUCTION — Say: "Today we will begin our unit about plumbing. I think you will learn many things that you have never before considered about plumbing. I would like you to do some thinking and some recording of your thoughts about how plumbing affects our lives. You may work individually or in groups with one person doing the recording. After you have finished we will discuss your results."

CLASS ACTIVITIES

1. Write individually or in groups as stated above.
2. Class discussion of results. (Elicit health factors if pupils do not suggest them.)
3. Teacher records class results on chalkboard.
4. Use task cards.

SUMMARY

1. Review list on chalkboard.
2. Hear reports by pupils using task cards.

Lesson 2

PURPOSE

To learn about the basic hand tools and equipment used by plumbers.

MATERIALS

1. Resource person with tools and equipment (see Community Resource section).
2. Vocabulary cards (names of tools and equipment).
3. Task card 3.
4. Thank-you notes.*

INTRODUCTION

Say: "Yesterday we began our unit about plumbing. This is one of the career fields which is called a trade. Do any of you know someone who is a plumber?" (Take contributions briefly.) "Today we have a guest who is a plumber. He has brought some of the tools and equipment he uses in his trade. Listen carefully, so you will be able to ask good questions and remember the names of the tools. Our guest will also be mentioning safety rules followed by plumbers when using their equipment."

CLASS ACTIVITIES

1. Listen to guest speaker. (As speaker discusses each piece of equipment, the teacher will give a vocabulary card to a pupil who will match the card to the tool.)
2. Ask questions and review vocabulary.
3. Work with vocabulary cards in game fashion to be certain the children are familiar with the tools. (Suggestion: Divide class in half. Alternate sides, giving points when a member of one "team" can successfully match card to tool.)
4. Task card.

SUMMARY

1. Review information from speaker.
2. Reports from pupils using task card.

*Thank-you notes should always follow use of a resource person. This could be a language arts activity.

Lesson 3

PURPOSE

To gain an understanding of the necessity for safety precautions taken by plumbers.

MATERIALS

1. Large chart paper.
2. Large butcher paper (bulletin board size) for mural.
3. Felt pens or tempera paint.
4. Paint brushes if using paint.
5. Task card 4.

INTRODUCTION

Tell the class: "Yesterday our guest showed us the tools and equipment used by plumbers. He also mentioned some safety rules followed by plumbers. Let's see how many of those rules we can list together."

CLASS ACTIVITIES

1. Make list on chart paper of safety rules.*
2. Divide class into groups to illustrate each rule. Divide the butcher paper into as many rules as have been listed. With either felt pens or tempera, create a mural which illustrates the various safety rules.
3. Task card.

SUMMARY

1. Class discussion of mural.
2. Reports from pupils using task card.

*No rings or watches (solder attaches and burns skin).
Long sleeves (also to prevent burns).
Long pants, no cuffs (get caught in equipment).
Hard-toe shoes or boots.
Hard hats (protection from falling objects).
Goggles could be worn if grinding concrete away from pipes to be worked on.
Care taken when using soldering equipment (fire hazard).

Lesson 4

PURPOSE

1. To learn to distinguish between new construction and repair work.
2. To understand the subsequent differences in a plumber's work day.

MATERIALS

1. Two charts, headed "New Construction" and another headed "Repair Work."
2. Felt pen.
3. Task cards 5 through 7.

INTRODUCTION

Say: "There are two basic kinds of plumbers: those who do repair work and those who work on new construction. As you see, I have prepared a chart headed 'New Construction' and one headed 'Repair Work.' I would like you to name things a plumber might do and things that might happen in his day if he worked in one or the other capacity. When we finish, I would like to discuss the advantages and disadvantages to each way of working as a plumber."

CLASS ACTIVITIES

1. Make lists.
2. Discuss lists as mentioned in Introduction.
3. Class debate following directions on task card 6.

SUMMARY

1. List.
2. Result of debate.
3. Reports from task card users.

Lesson 5

PURPOSE

To gain an understanding of why it would be useful for a layman to know something about plumbing.

MATERIALS

1. Pencils and paper.
2. Drawing paper and crayons.
3. Task cards 8 and 9.

INTRODUCTION

Say: "We've already learned many things about plumbing and plumbers. Today I want you to do some thinking about why it would be useful for each of us to know something about plumbing. I am going to give you a choice of how you will record your thoughts. You may work individually or in small groups. When you are finished, we will share our results."

CLASS ACTIVITIES

1. Some children will want to write.
2. Some children will draw a picture to illustrate why it would be useful to know about plumbing.
3. Others may use the task cards to get ideas for the presentation of pantomimes and role-playing.

SUMMARY

After about 25 minutes, pupils will report their findings.

Lesson 6

PURPOSE — To relate educational skills to skills used on the job.

MATERIALS
1. Work sheet (see following page).
2. Task cards 10 and 11.

INTRODUCTION — Ask: "What are some of the skills we learn in school?" (Elicit academic areas, artistic skills, and social skills.) "How might a plumber use these skills on the job?" (Discuss.) "Today we have a work sheet which will give you an opportunity to show how what we learn in school would be needed by a plumber to do his job well."

CLASS ACTIVITIES
1. Do work sheet.
2. Task cards.

SUMMARY
1. Discussion of work sheet.
2. Reports from pupils using task cards.

WORK SHEET
(Lesson 6)

DIRECTIONS: Beside each school-learned skill listed, place a check in the proper column to indicate how often you think that skill would be used by a plumber on his job. Be prepared to defend your choices.

Name _____.

Skills	Often	Seldom	Never
ACADEMIC AREAS			
Reading			
Spelling			
Math			
Writing			
Listening			
Speaking			
Language			
Social Studies research			
SOCIAL SKILLS			
Getting along with others			
Sharing			
Helping others			
Cooperating			
Making decisions			
Working with a teammate			
Working with groups			
Working independently			
Following directions			
Friendship			
ARTISTIC SKILLS			
Keeping work area clean, orderly and attractive			
Drawing			
Drama			
Dancing			
Singing			
Playing instruments			

Lesson 7

PURPOSE

To describe the role of the plumber in the worker/consumer relationship.

MATERIALS

1. Paper and pencils.
2. Task cards 12 through 14.
3. Poster paper.
4. Felt pens.

INTRODUCTION

Tell the class: "The plumber who works on new construction very rarely sees the people who will live or work in the buildings he plumbs. What kind of responsibility or special relationship might he have with regard to his customers?" (Elicit: He has a responsibility to do his best work so that things will function properly.) "What rewards come as a result of doing one's very best? What kind of contact would a plumber who does only repair work have with his customers? What kinds of things would such a plumber have to be concerned with when dealing with those customers?"

CLASS ACTIVITIES

1. Class discussion of above questions.
2. Pupils may illustrate by writing, drawing, or both how a plumber might feel about doing his best work (or failing to do so).

   or

3. Illustrate a situation where a plumber is coming into direct contact with a customer.
4. Task card.

SUMMARY

Discussion and sharing of any activities done by the pupils.

Lesson 8

PURPOSE

To describe the role of the customer in the plumber/consumer relationship.

MATERIALS

1. Field trip to local building supply retailer.
2. Permission slips.
3. Standards chart.
4. Catalogs.
5. Poster paper.
6. Scissors.
7. Glue.
8. Task cards 15 through 17.

INTRODUCTION

Tell the class: "Today we are going to visit a building supply store which, among other things, sells plumbing supplies and fixtures. We will be walking through the store, looking at many things and listening to our leader. Before we go, let's talk about some things we should remember about our behavior on this trip." (List on chart.)

"Please be on the lookout for fixtures you might like to have in your own home. We'll be working with your ideas when we return."

CLASS ACTIVITIES

1. Field trip.
2. Pretend that you have $1,000.00 to spend. From a catalog, select the bathroom fixtures you would like to have in your home. Be sure you buy everything you need and that you do not spend more than $1,000.00. Arrange the things you have chosen on your paper and glue them into place. Be prepared to prove you have not gone over your budget. (Work individually or in groups.)
3. Task cards.

SUMMARY

The pupils will share the results of their "shopping spree."

Lesson 9

PURPOSE

To evaluate what the children have learned about the plumbing trade.

MATERIALS

1. Tape from pretest.
2. Tape recorder.
3. Entry Level Assessment.
4. Task cards (all).

INTRODUCTION

Say: "Today we are going to find out how much we've learned about the plumbing trade. First, let's listen to the tape we made before this unit began. Let's find out how much more we know now."

CLASS ACTIVITIES

1. Listen to pretest tape.
2. Make new tape as a post-test.
3. Free use of task cards.

SUMMARY

The tape acts as a summary for the unit. During taping, children should feel free to express their opinions regarding this unit, describing what they might not have liked, as well as what they did like.

plumbing SERVICE

You need:

1. drawing paper
2. felt pens
   or
3. pencil and paper

There are an amazing number of things we use daily that would not be available to us if it weren't for plumbers.

1. Go home this afternoon and look around your home. Notice which things require plumbing.
2. If you like to draw, draw pictures of these things.
3. If you prefer to write, list all the things you notice.
4. Bring your list or drawing to class.

RESEARCH IT!

You need:

1. set of encyclopedias
2. pencil and paper
3. interest in research.

THE HEALTH ASPECTS OF PLUMBING CANNOT BE OVERLOOKED.

1. Do research to find out how our health is affected by plumbing and other sanitation facilities.
2. Perhaps you can find some information regarding other countries whose people are affected by the lack of sanitation facilities.
3. It might be to your advantage to call or write to the Department of Public Health to get information.
4. Write a report to share with the class.

GOOD GUESS

You need:

1. 3 friends
2. a knowledge of plumbing tools and equipment
3. a score card

1. Describe a piece of equipment or a plumbing tool to your friend (teammate) without giving its name. Give as good a description as you can.
2. He then tries to guess the name of the tool. If he guesses correctly, give your team a point.
3. The other team follows the same procedure.
4. As each team has a turn, the partners trade roles as describer and guesser. Naturally, you will try to help your teammate by being a knowledgeable describer.
5. After an even number of turns for each team, tally your scores.

SAFETY FIRST

You need:

1. long sheet of butcher paper
2. two pieces of doweling
3. crayons
4. felt pens
5. a friend (if you wish)

1. Think about the safety rules a plumber follows.
2. Make a roller movie showing plumbers following the rules, and the results of situations where the rules were not followed.
3. Make it interesting, bright, and colorful.
4. Take your time and do a good job.
5. Share it with the class.

DO SOME THINKING

You need:

1. pencil and paper
2. interest in writing
3. a friend, if you wish to work together

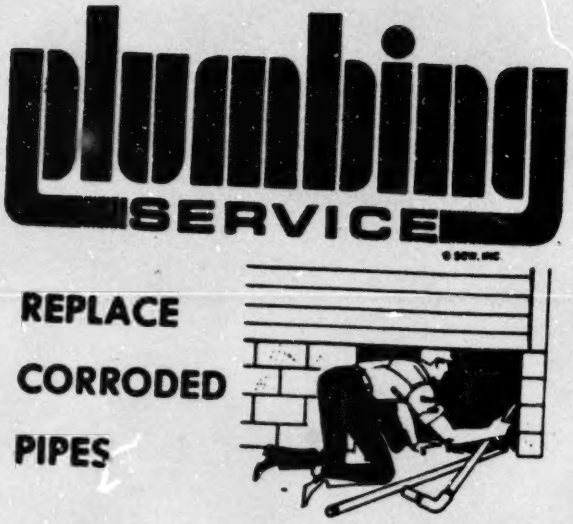
There are two major ways to work as a plumber. One way is to work on new construction. The other way is to do repair work.

1. Write a report telling about the work day of a plumber who works on new construction.

2. Write a report about a plumber who does repair work.

3. Write an essay comparing the advantages and disadvantages of both ways of working as a plumber.

4. Write a humorous story in the first person about a day in the life of a repairman.



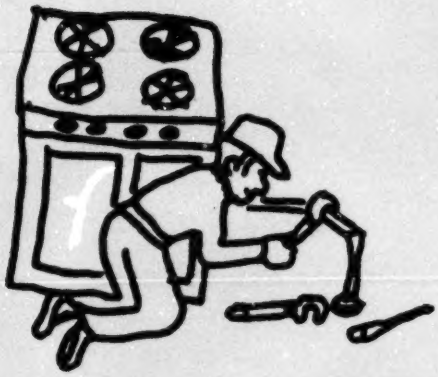
DEBATE

You need:

1. some friends
2. an audience
3. debating ability

1. Form two debating teams.
2. Have one team be in charge of defending the plumber who does new construction.
3. The other team will take the side of working as a repair plumber.
4. Be sure you know your facts.
5. Debate the issue in front of your audience. When you are through, have them vote as to which team presented the better case.

REPAIR OR NEW CONSTRUCTION?



You need:

1. a plumber
2. an interview sheet
3. a pencil
4. a friend (if you wish)

1. Interview the plumber to find out why he chose to work in the field. Ask him to tell you about the advantages and disadvantages on his job.

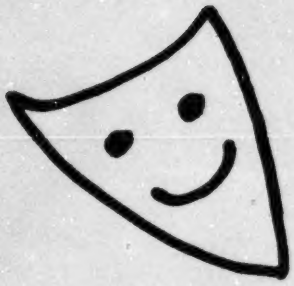
2. If he works on new construction, ask him why he thinks this way is better than doing repair work.

3. If he is a repairman, ask him the same question in reverse.

4. File your interview in our file, or add it to our bulletin board.

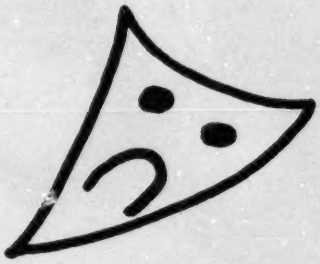
PLUMBING

SALES & SERVICE



You need:

1. some friends
2. acting ability
3. situations listed below



With your friends, role-play some situations where a layman would need to know something about plumbing.

Here are some situations:

1. You are doing the dishes. When you are finished, you pull the plug. Nothing happens.

2. You are washing your hands. The soapiness allows your ring to slip off your finger. It falls down the drain.

3. You are doing the laundry. Soap begins to billow out of the machine, followed closely by water. What do you do?

4. Someone in the house flushes the toilet. The water comes up, up, up, and spills out onto the floor. It is getting higher and higher.

Shhhhhhhhhhh.....

You need:

1. some friends
2. acting ability
3. pantomime situations listed below

Pantomime one of the following situations. Remember, no words!

1. Your wife tells you she wants a new washing machine. You agree, but learn the installation costs $50.00. You don't want to pay it. You decide to install the washing machine yourself.

2. You get home from work to discover that the bathtub won't drain. You either have to take a shower standing in a foot of water or do something about it.

3. Your kids all have long hair. They wash it a lot, and it plugs up the sink. Show them how you feel about it.

READING?

MATH?

ART?

MUSIC?

COOPERATION?

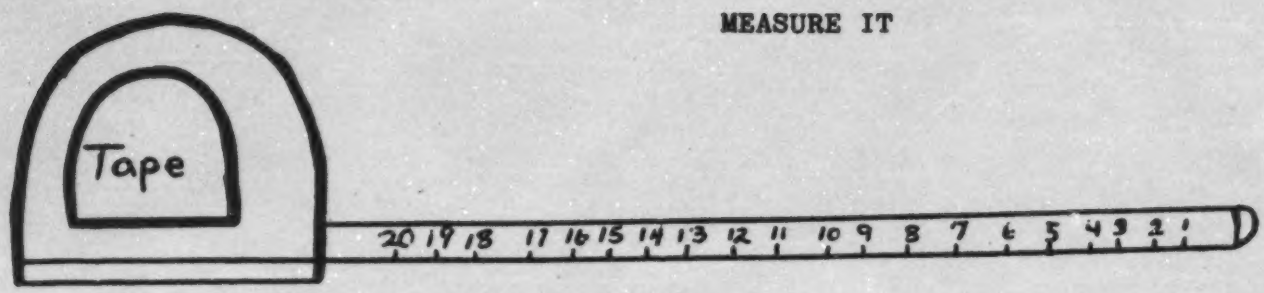
INDEPENDENCE?

You need:

1. pencil
2. paper

Write a paragraph telling how you would use one or more school skills if you were a plumber. Describe the situations on the job where certain skills would be necessary. Convince the reader that he really does need to work on certain skills at school to be able to do a plumber's work.

MEASURE IT



You need:

1. a tape measure
2. paper and pencil
3. a friend

PLUMBERS USE MATH A GREAT DEAL, ESPECIALLY THE SKILLS INVOLVED IN MEASURING

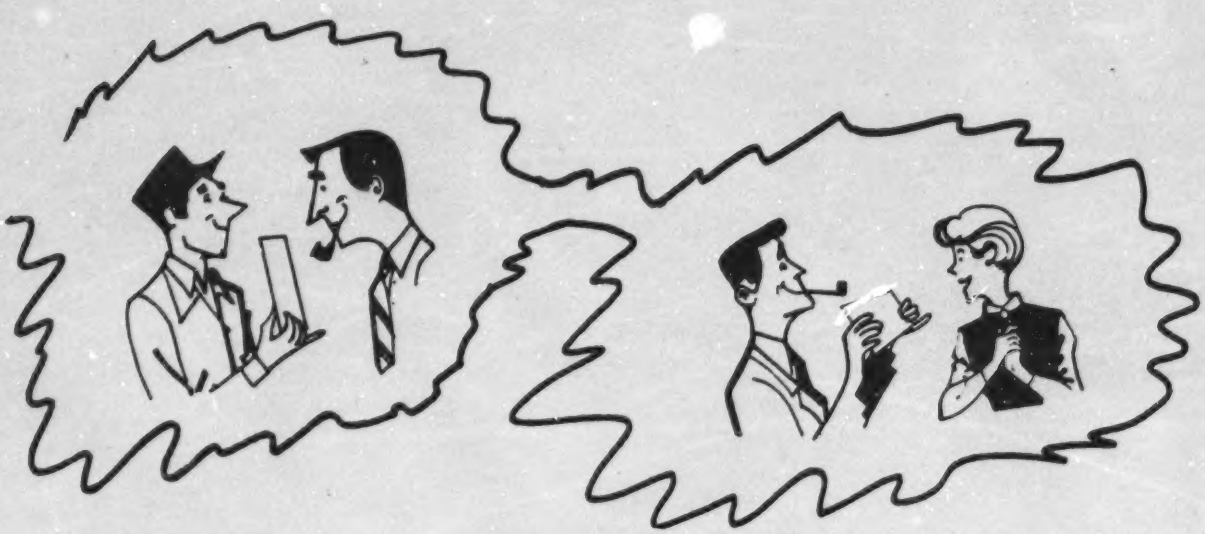
1. Make a list of things you would like to measure. Measure some big things, and some small things.

2. Take your friend along to help.

3. Be as accurate as you can. Check yourself; then record your measurements.

4. Give your list to someone else. Ask him to measure the same items. See where you agree and disagree.

5. Go together to remeasure those things where you were in disagreement.



You need:

1. some friends
2. acting ability

1. One actor should be the plumber; one should be the wife; one should be the husband.

2. As the plumber, present a bill to the husband or wife that he or she will be happy to receive. He or she will then pass it on the the other person, who will also be very happy over how small it is.

3. Present the same situation, but have the husband or wife or both show great unhappiness at the bill.

4. Present it to the class.

IT'S IN THE YELLOW PAGES

You need:

1. telephone book (yellow pages)
2. pencil
3. paper

1. Choose a letter of the alphabet.
2. Make a list of all the plumbing repair companies whose names begin with that letter.
3. You can list more than one group if you wish.
4. List their name, address, and phone number.

TASK CARD 14

READ WELL

You need:

1. Book: Come To Work with Us in House Construction, by Wilkinson
2. Book: Your World: Let's Build a House, by Pope

(Ask your school or public librarian to help you find these books.)

1. On page 27 in the first book, there is a poem about the role of a plumber. Read it. Memorize it if you wish. Recite it to the class.

2. Write a poem of your own telling about the responsibilities of a plumber.

3. In the second book, read pages 16, 17, 18.

4. Report to the class what you learned. You may show the pictures in the book.

You need:

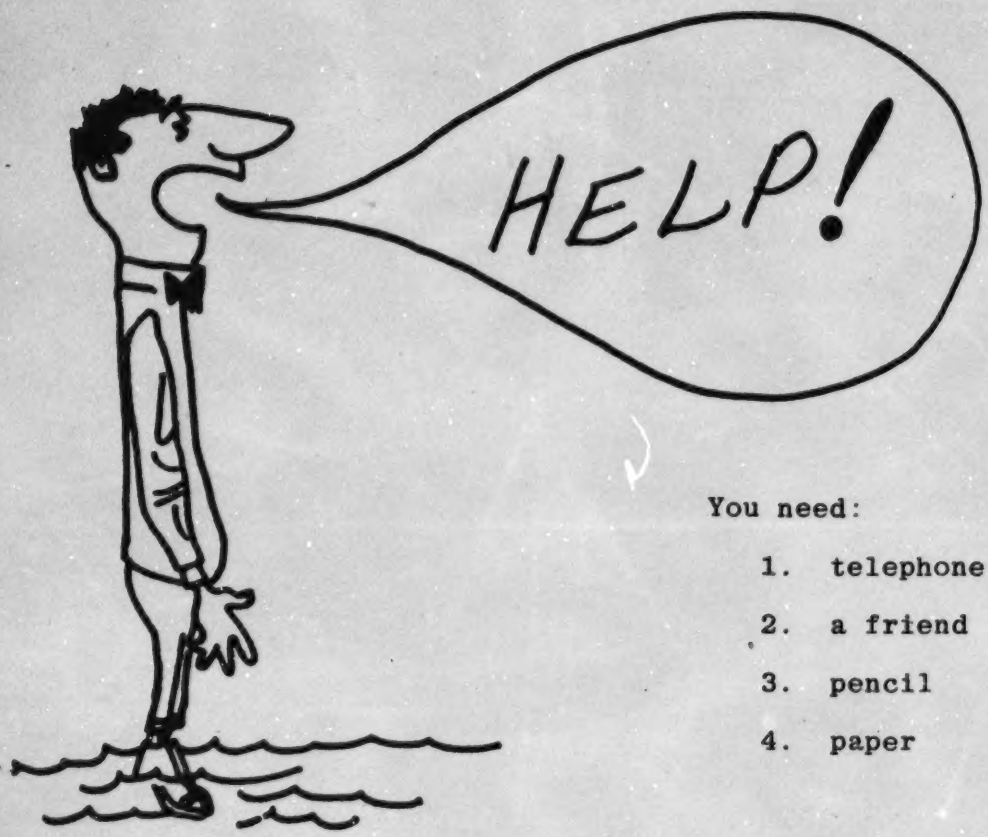
1. telephone book
2. paper
3. pencil

1. In the telephone book, find the section of the yellow pages which lists plumbing contractors.

2. Choose two of them to write letters to.

3. Ask them why they feel you should choose their company to do the plumbing for your new house.

4. When you receive your answers, decide which contractor you would hire.



You need:

1. telephone book
2. a friend
3. pencil
4. paper

See the cartoon man on this card? He's in terrible trouble. Call a plumber for him as fast as you can!

Alternate with your friend, looking up numbers in the yellow pages, this way:

1. First you find the name of the company you want him to find the number for. Write it down.

2. Close the telephone book and tell him the name of the company.

3. Time him to see how long it takes to locate the number.

4. Let him time you on another number.

5. See how fast you can become at looking up numbers.

BEAUTIFY

You need:

1. catalog
2. scissors
3. poster paper
4. glue

In the catalog, find pictures of fixtures and appliances you would like in your bathroom or kitchen.

1. Cut them out.

2. Arrange them on your paper so that it looks like a room.

3. Glue them in position.